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39. DEVELOPMENT OF MIS COURSES THROUGH KNOWLEDGE MANAGEMENT: AN E-LEARNING PROJECT FOR ONLINE DELIVERY BY THE MINISTRY OF EDUCATION IN JORDAN

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Abstract

In this era of information, traditional practices, technologies, skills, and knowledge are becoming obsolete at a much faster pace than ever before. The technological pace and the advent of the knowledge society will set in the next years the new context for e-learning evolution. This makes lifelong learning a necessity for everyone. An e-learning project is a promising solution to the demand for a flexible means of delivering knowledge to educate a large number of people over a vast area. MIS-Online project is an e-learning project in ministry of education in Jordan. The main objective of the project is to develop e-materials based on the curriculum of the Management Information Stream (MIS), which is an academic stream in the secondary schools. The adopted pedagogical model is project-based learning, through the development of different scenarios that link to different themes in the MIS textbooks. This paper describes this experience with the developed storylines.

Keywords

Knowledge management (KM), e-Learning, Management Information Stream (MIS), MIS-Online project, ERfKE, Ministry of Education, Jordan.

1. Introduction

Compared to our ancestors, we live in an era of unprecedented change. This change brings with it opportunities both for success and for disaster. If individuals, organisations and nations are to court success and avoid disaster, it is imperative that we identify useful mechanisms that will enable us to amplify the possibility of one while nullifying the onset of the other. The fundamental tenet of this paper is that effective knowledge management within the context of ongoing educational processes can lead both to the successful development of growth economies' and the creation of more stable societies based on the principle of dynamic knowledge sharing.

Due to the current economic uncertainity, organizations in both private sector and public sector are facing great change. At such a time, there is great value in both knowledge management (KM) and e-learning. They have much in common and yet, in some respects, they are poles apart.

KM is defined as 'getting the right knowledge to the right people at the right time through a collection of technologies, tools and philosophy'. Like KM, e-learning is trying to spread knowledge, even if KM agenda is more focused on systems and systems architecture. Both KM and e-learning were born out of the IT revolution but they have grown up trying to do different things.

KM is making tacit knowledge- that is, knowledge that is inside people's brains- in an organisation's workforce into explicit knowledge in a format that can be easily accessed by others. E-learning is turning tacit knowledge and best practice skills within an organisation into explicit knowledge in a format that can be easily accessed and learned and applied by others for different purposes.

KM focuses on the storage and retrieval of knowledge. E-learning focuses on how people apply their knowledge. But KM involves recognising, documenting and distributing the explicit and tacit knowledge resident in an organisation and so does e-learning.

The MIS-Online project presented in this paper combines Courses, examinations, exercises, case studies, skill profiles, course profiles into an adaptable framework that provides integrated support and mediation for the various stakeholders involved in an elearning system. In this paper, we will emphasize the role of knowledge management as an enablor for e-learning.

The rest of the paper is organized as follows. Section 2 describes the Current Efforts of Jordan Ministry of Education and the special agreements and partnerships with companies and agencies inside Jordan and abroad. In Sect. 3 the different phases of knowledge management in the Jordan ministry of education are discussed. An Overview of MIS-Online Project and its objectives are discussed in Sect. 4. In sections 5,6,7,8,9,10,11,12 the whole activities of MIS-Online project are presented including: the starting point, a project under construction, the main stages of the project, the project team, the completion data, the main themes of Mis-Online, the general architecture of the Mis-Online program and accessing Mis-Online. We conclude the paper by summarizing the MIS-Online project experience and contributions for students and teachers.

2. Current Efforts of Jordan Ministry of Eduction

The ministry of education in Jordan focuses on gaining the benefits of using the technology tools in the pedagogical process, by computerizing the learning contents and curriculums. In April 2006, Ministry of Education of Jordan, JAID Productions and the Academy for Educational Development ("AED"), signed memorandum of understanding that contained the following:

- The adoption of the Educational Reform for Knowledge Economey (ErfKE) for delivery effective e-learning to Jordanian citizens.
- Approximately Two hundred MIS schools in Jordan benefited from the MIS curriculum under the ERfKE Reform.

- The ministry of education and JAID start work together to developing a project for producing e-materials based on the Jordanian curriculum.
- In connection with the development of e-Materials to meet the following goals of the Initiative, the Ministry, AED and JAID desire to work together on the pilot implementation of the e-Materials in MIS program schools (the "e-MIS Project").
- The United States Agency for International Development ("USAID") has agreed to finance the creation of the "e-Materials" for the MIS program, through the ERfKE Support Project ("ESP"), managed by the Academy for Educational Development. (the points from ESP coordinator)

The memorandum of understanding took in account the main following provisions:

a) The parties of this memorandum The parties of this memorandum emphasizing to developing e-materials that are conformable for ERFKE objectives and based upon the Jordanian Management Information Stream curriculum.
b) The e-materials meet the international standards for developing the e-materials.
c) JAID will provide technical support for the first year after delivering the final version, and training to teachers.
d) The curriculum software will be warranted by JAID, and it will be free error, and will meet the international standards.
e) The Parties agree to work collaboratively with the Ministry to ensure that the e-Materials are available for use and owned by the MoE, which will possess copyrights under its agreement with the U.S. Agency for International Development (USAID), and will receive a copy of all content developed by the Project.

3. Knowledge Management in Jordan Ministry of Education

Knowledge management (KM) is the engineering and organisation of human environment and the processes that will help the ministry for producing and creating knowledge through choosing, codification, utilisation and spreading that knowledge. A suggested model for KM in Jordan Ministry of education is depicted below (Figure1).

KM help in transfer and convey the critical information and essential experiences that is available in the ministry to the right people at the right time in order to be embedied in various administrative activities, and utilise it in making rational decisions, problem solving, organisational learning and strategic planing.

Information and communication technology (ICT) that is available in Jordan ministry of education must have critical and pivotal role in building the knowledge management system in the ministry, by means of it's ability in accessing, creation, transfering and sharing among employees.

There are three phases of KM for harnessing and best utilising the knowledge in Jordan ministry of education, in phase one, the ministry focuses on the distribution of timely information for decision makers. KM is driven by information technology, through the Internet, Intranets, databases, digital libraries and search engines. The emphasis is on content, or 'codified knowledge', in documents, symbols and images.

In phase two, the ministry focuses on the conversion of tacit to explicit knowledge, driven by human factors, such as establishing communities of practice. Here, the emphasis is on

processes, using post-mortems, debriefs, evaluation, after action reviews, learning, history, 'peer assists' and peer review.

In phase three, the ministry focuses on knowledge sharing, along with knowledge capture and accumulation. It is driven by increasing interest in intellectual capital and ways of valuing assets beyond the balance sheet. The emphasis is on the integration of activities, consistency, reinforcement and 'additionality'.

Figure1: A suggested model for KM in Jordan ministry of education
Source: (By Researchers)
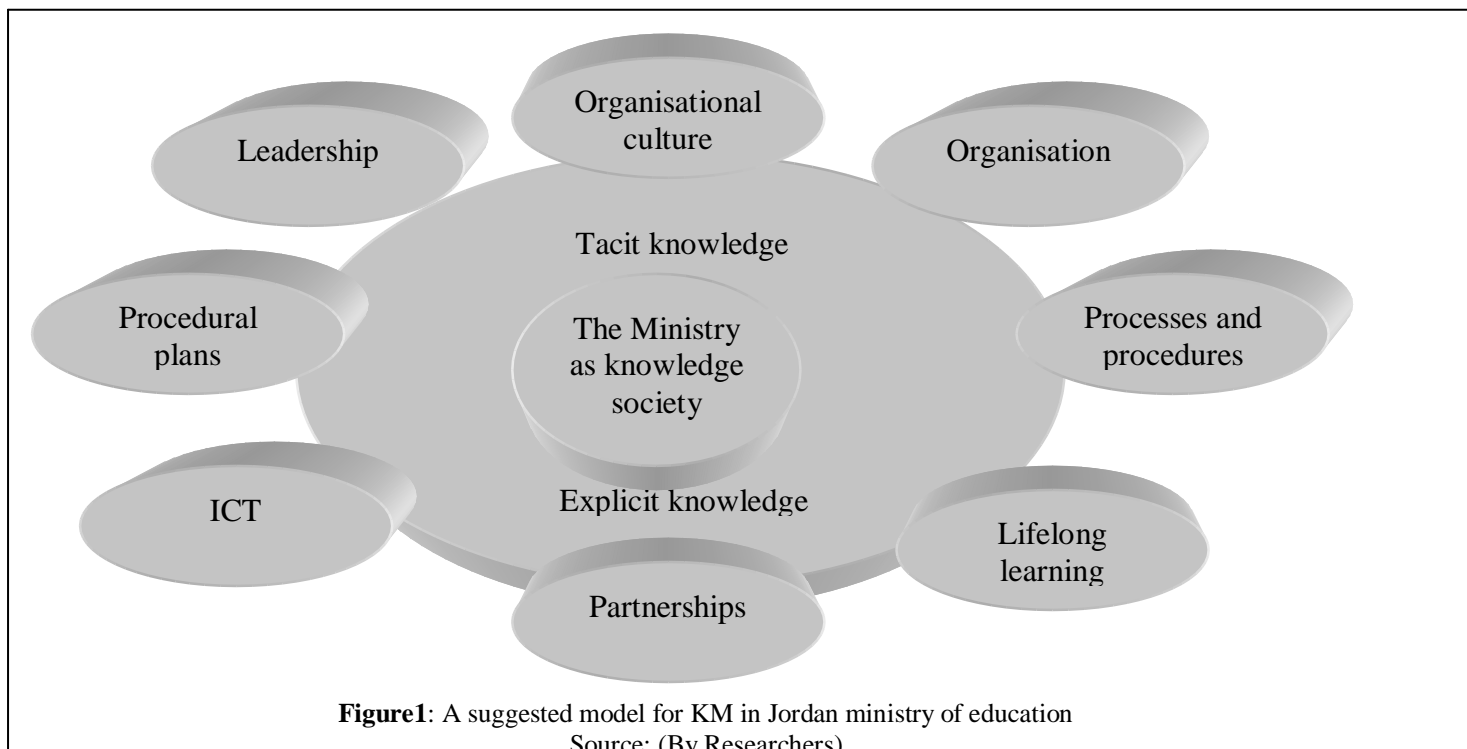
4. MIS-Online Project: An Overview and objectives

The Ministry of Education's (MoE's) Management of Information Stream (MIS) is a new field of study for high school students; that was initiated as part of the Ministry's vision of preparing youth for work in Jordan's emerging knowledge economy. This vision seeks to ensure that graduates from secondary schools have marketable skills for work in Jordan's growing information technology sector and other areas of the economy that require extensive use of ICTs. The new academic MI Stream is being implemented in grades 11 and 12 and replaces the Commercial Education stream that was part of Jordan's vocational education program. The MI stream requires students to take three core courses: Computerized Accounting; Management of Information Systems; and Basics of Management. Students can also select from three elective Programs: Computer Programming, E-commerce, and Business Statistics.

It is expected that MIS-Online project will help studetns, educators to achieve the following:
- Provides speed and lowest cost to accessing information by the MIS students of MoE.

- Develop MIS student skills to be able to synthesize and analyze the vast amount of information and is able to select useful and credible information.
- Using simulation methods to simulate real life situations for the purpose of simplifying the learning contents and to be gained vastly and smoothly by the students.
- Provides the ability for the students to be life long learner.
- Develop the employability skills of the students to be active element in the Jordanian market.
- Introduce the MIS concepts in a more enjoyable manner to make learning fun.
- Creating technological generation thus make learning MIS more interesting and up to date.
- Understanding the applications MIS subjects in our real life.
- Support MIS educators in teaching and learning the MIS subjects.
- Guide MIS educators on the use of different research techniques.
- Promote project based learning, through the development of different scenarios that link to different themes in the MIS textbooks.

5. Starting Point

ERfKE support project (ESP) provides support for the Ministry of education in Jordan in two important areas. The first area, supporting MoE in their efforts to introduce the new Management of Information (MI) stream into high schools and adopting e-learning models as effective tool in developing the curriculum which are reflected positively in scaling up the education levels, and to create technological generation marches to the new era. The second area provides the MoE alternative approaches to integrating the use of computer technologies in education. By several interrelated pilot projects designed and carried out in collaboration with the MoE and Jordan Education Initiative (JEI).the success of these projects depend on the main elements of education process (education principals) teachers and students to integrate the use of computer technologies into routine teaching and learning.

To determine which of computer technologies are suitable and best tools for improving teaching and learning methods in all of Jordanian schools, ESP is using the Discovery School Pilot. This pilot seeks to test different ways of deploying computer technologies in schools (other than through central labs or via teacher-based laptops and projectors) that will improve the integration of ICTs into teaching and learning.

Discovery School Pilot aimed to select target group, initially two schools are chosen, The Ahmad Toukan Comprehensive boys' school in Amman 4 directorate (which has a vocational stream), and Al Khansa'a Comprehensive School for girls in Amman 2 directorate. Both of these schools are considered as training center, also at least 30 teachers will be participants in this pilot, in addition to, these teachers will train on five subjects: arts, science, MIS and ICT, vocational education and languages. For the primary level teachers, the training will include other subject which are languages (Arabic and English and others), science, math, social studies, civics and vocational education).

Actually, the computer labs in our schools contain limit numbers of computer because of the shortage space, this is critical balk. as a result, the needed time by the student to accomplish his tasks is very small. This means, the student can not achieving the learning objectives as planned, and the learning environment is not Compatibles with student needs and capabilities, in order to establish computer labs. These realities can make it impossible for schools to

build enough labs to meet initial and growing demand for access to computer technologies through labs.

As attempt to overcome this problem, ESP used COW (Computer On Wheels) as alternative, COW is mobile cart with 10 to 20 or more WiFi capable laptops a basic server (possibly one of the laptops), a multifunction printer, or other equipment. The cart is moved to classroom rather than the students travel to other room.

6. A project Under Construction

JAID have started implementing the proposed project, work on the project is not yet complete until to ending the development cycle, and JAID highlighted the following main points:

- The original project was to cover MIS-Online for Grades 11 and 12. Under this restructuring, work related to Grade 11 only will continue, while work for Grade 12 will cease, as the implementation of such a project during the Tawjihi year needs to be re-planned in order to be successful.
- The number of Storylines to be developed originally was proposed as 12 storylines. Under this proposed modification, the number of developed Storylines will be 6 in total, and thus the first 6 storylines will be completed.
- The number of modules in the original proposal was 70 student modules and 2 teacher modules. Under the proposed revision, the total number of student modules will be from 30 to 35. The exact number of modules will be agreed to once the matrix and distribution of learning outcomes is revised. As for the teacher modules they will extend to 6 modules.
- Piloting of Storylines (1-3) are scheduled for first semester of the 2007/2008 academic year, and the piloting of Storylines (4-6) are scheduled for the second semester of same academic year.

JAID specified the following points as main outcomes for the proposed project:
1. Six Storylines (the learning contents) which are include 35 modules.
2. The MIS-Online Online Resource Library (ORL) consists of links to public articles, case studies, white papers, web sites as well as supplemental learning resources that are added by the various teams and linked with the modules as appropriate. It will also include links to other applications such as the "Financial Calculator, "Dukkaneh", and "ITAC".
3. MIS-Online Glossary contains MIS terms and concepts.
4. MIS-Online Teacher Modules.
5. MIS-Online Introductory Module.

7. The Main Stages of the Project

7.1 preparing the storylines and discuss them through regular sessions and improving them by Educational Expert, Business Consultant, Instructional Design Expert and the Multi Media Developers take part in these discussions.
7.2 A first digitized prototype is produced under supervision of the Instructional Designers and SMEs. Final evaluation of the Storyline and its final Outcomes is conducted. Initial QA for the Storyline before delivery to TC is conducted by the team leaders and Instructional Designers.
7.3 verifying the fist digitized prototype to gain the approvals and notes.

7.4 delivery the fully digitized storylines after the conducting of the Instructional Design, the language editing.

7.5 Storyline is piloted in schools for testing by students and teachers. Then reviewing assessment reports.

7.6 Final production is ready, this after reviewing pilot reports and approvals.

7.7 The complete MIS-Online product is published to be rolled out into schools.

8. The Project Team

This section is focuses on building the team of the project and selecting the best team members who will assist in delivery the best outcomes, this team is updated continuously to keep the high level of efficiency, as the following:

1. Focus on allocating and utilizing local experts in education and instructional design.
2. Members of the SMEs that were originally specialized in subjects specific to Grade 12 will be replaced and/or re-allocated.
3. Some of the SME's as well as JAID resources will be re-allocated to provide more research for resources to be included in the modules.
4. Others will be allocated to provide first hand feedback from schools for monitoring and evaluation by attending classes in various schools where MIS-Online is being piloted. Information provided as a result of such visits will be utilized in the building of the actual material as applicable, and possibly uses some of the material developed by these students and teachers as examples.
5. There will be a main core of SMEs which will be responsible for the design and development of the material. Another set will be allocated as ready for working on amendments as feedback is received from the TC and the pilots at schools.
6. The development of the teacher modules will also be handled by both the main core and the sub team as required and applicable.
7. The term of the SMEs that are provided from the MOE as part of the team will be extended until mid-end June 2008.
8. JAID will also include other resources from MOE to provide consultancy on the product. These will include former TC members that have been involved in the project earlier, but are no longer part of the technical committee.
9. Quality Assurance will take place through the team members from JAID on various levels of the production. These resources will include team leaders, language editors, and QA specialists as described under the development process in the previous section.
10. JAID's team will also include a number of graphics and animation specialists that will be tapped into from JAID's pool of resources (as listed below) as required by the development process and schedule. These will be responsible for the development of any graphics required for resources and enrichments for all modules.
11. The training activities will take place through two sets of resources; educational and technical. The educational training aspects will be carried out by resources that are experienced as SMEs, education and supervision, as well as knowledge of the MIS-Online topics from an instructional and content point of view. The technical training will mainly focus on training on the EduWave aspects related to accessing and using the MIS-Online, and will be conducted by specialized EduWave trainers.

9. The Completion Date

The completion date for this project is June 2008. Accordingly, all deliverables should be ready and finalized by early June.

10.   Main Themes of MIS-Online

The project includes six themes which are created by ESP and the MoE for the e-Learning modules include the following:

➢ Basic Business Concepts and Principals of Business Management.
➢ Planning: planning projects is also central to all of the six MIS subjects. Each e-Learning module should help students learn about the planning process from a practical perspective and to use successfully effective planning strategies to complete their learning projects.
➢ Organizing Information and Resources: focusing on collecting and classifying the information about data, people, or things to be used complete work activities to achieve the objectives established by planning. And managing the resources which are time, skilled people, money, capital assets, tools etc.
➢ Communicating: the use of various communication tools to share information, the communication is also useful in marketing and business development. MIS-online project have most focusing on communication.
➢ Quality Control, Appraisal and Monitoring
➢ Leadership.

11.   General Architecture of the MIS-Online Program

MIS-Online would present students with contemporary and engaging simulations, case studies and projects as they develop their essential MI Stream skills. Six integration themes will be used to organize the development of the MIS-Online modules. These themes are common to business and all six MI Stream subjects.

These six integration MIS themes created by ESP and the MoE for the e-Learning modules include the following:

11.1 Basic Business Concepts and Principals of Business Management:

Planning: The planning process is central to all business activities. Understanding effective strategies for planning projects is also central to all of the six MIS subjects. Each e-Learning module should help students learn about the planning process from a practical perspective and to use effective planning strategies to complete their learning projects. Different e-Learning modules will focus on different topics related to the MIS curriculum and as a result different approaches to and principals of planning can be introduced and learned.
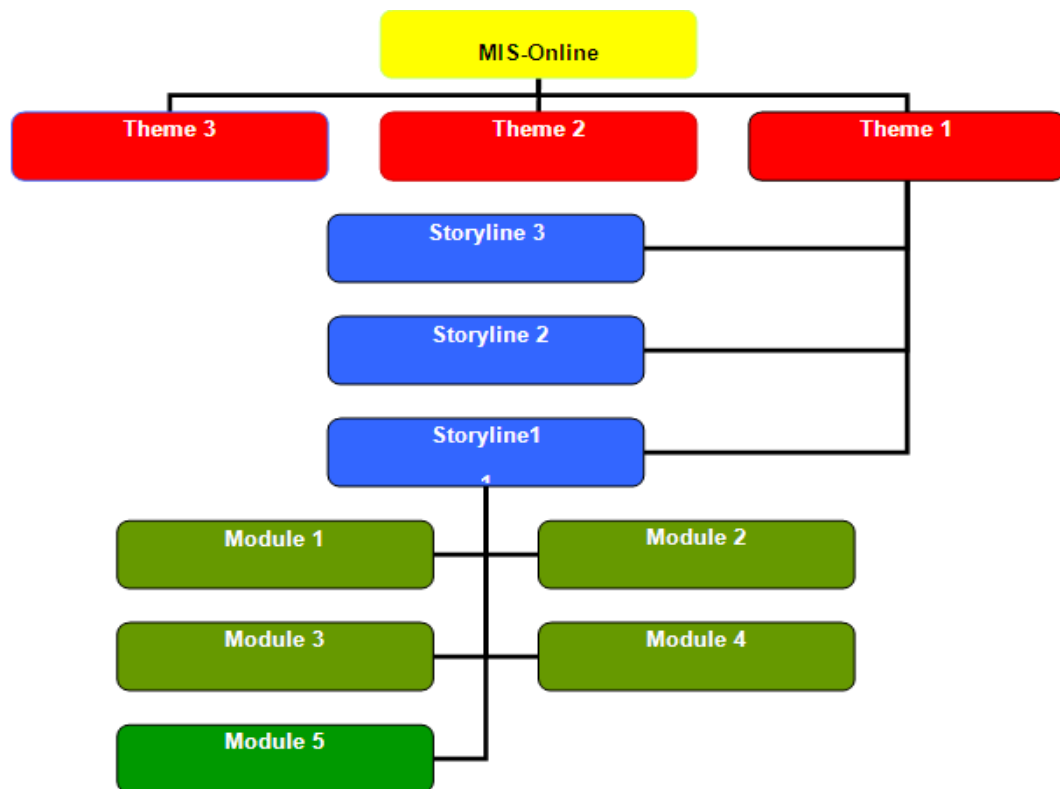
Organizing Information and Resources: This basic business and managerial function involves gathering, collating information about data, people, or things and then arranging this information so that it can be used to complete work activities to achieve the objectives established by planning. Businesses must also identify a variety of resources or inputs needed to carryout business activities. These resources include time, skilled people, money, capital assets, tools etc. To be effectively used, these resources must be evaluated, organized and used efficiently and be available to a business when needed.

Communicating: Complete coordination between the different functions through the use of various communication tools (digital and analogue) at different levels within business to share information and facts. Communication is also a critical part of marketing and business

development. Businesses communicate to customers, clients, suppliers, employees, partners and others important to carrying out their business activities and staying in business. The MIS-Online program will help students learn about different approaches to communication and the use of different media to communicate business information, market products and solve problems.
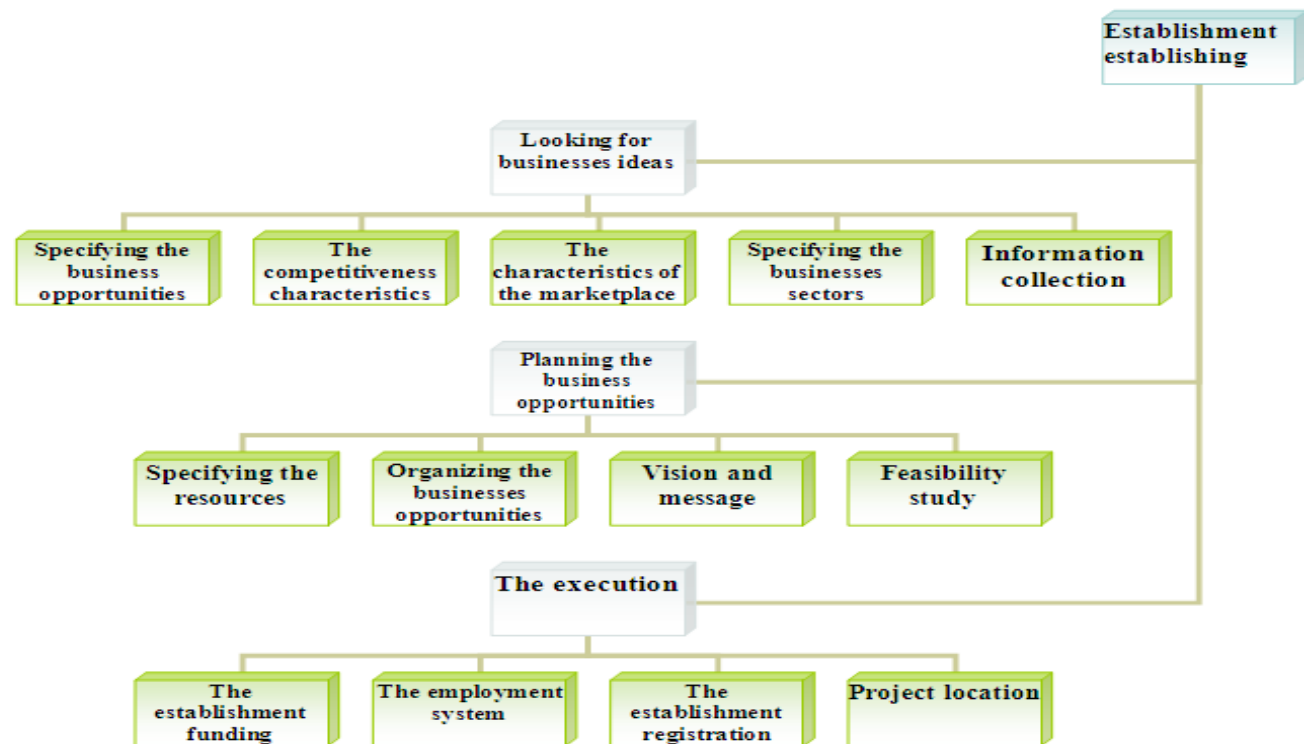
Quality Control, Appraisal and Monitoring: To be effective, businesses and other enterprises including government agencies and NGOs must ensure the quality of their work. An important part of quality control is processes of appraisal and monitoring of business activities.

Leadership: Leadership is an essential feature of all businesses. Leadership includes the ability to inspire others in a shared vision. Leaders must have a clear vision of what they are seeking to achieve and they must communicate these visions to their employees and colleagues. Effective leaders foster an environment within their companies that encourages risk taking, recognition and rewards, and empowerment. Good leaders allow other leaders to emerge within the organization and to participate in decision making process
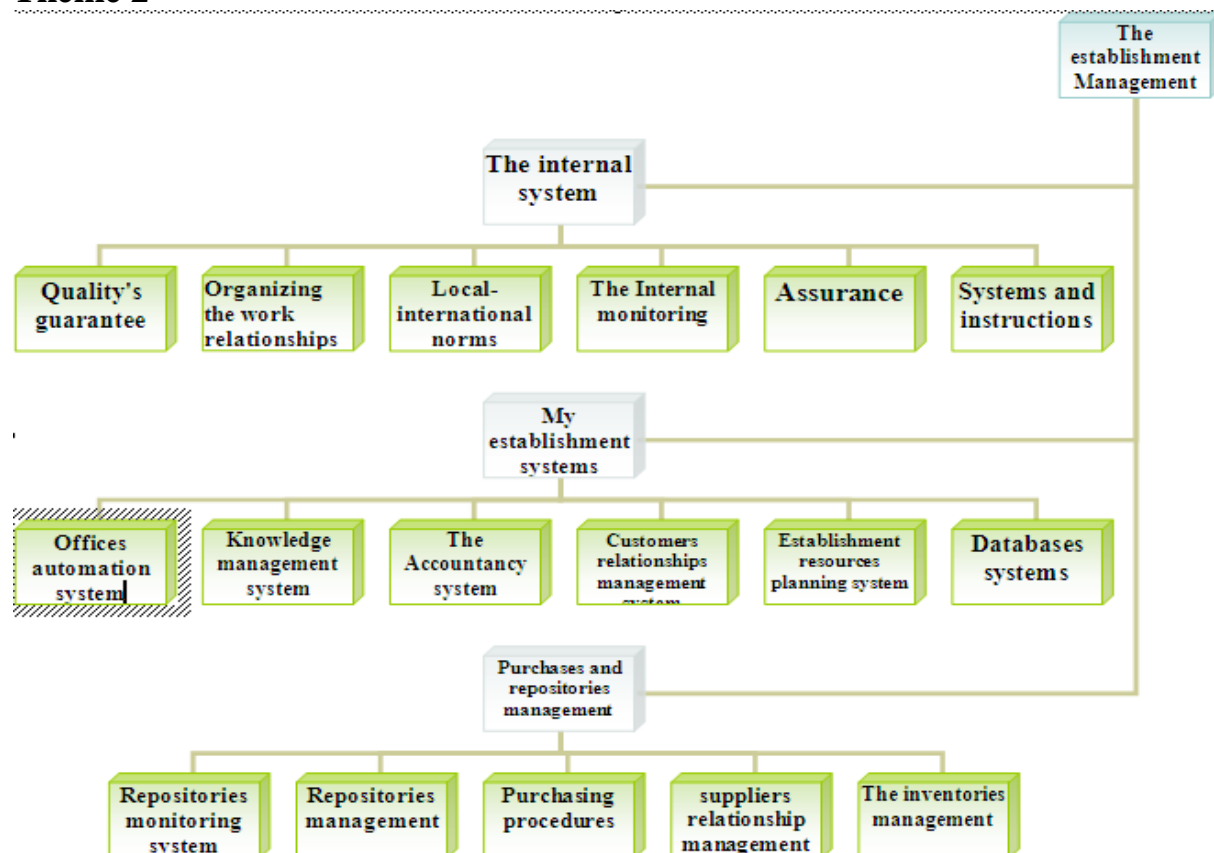

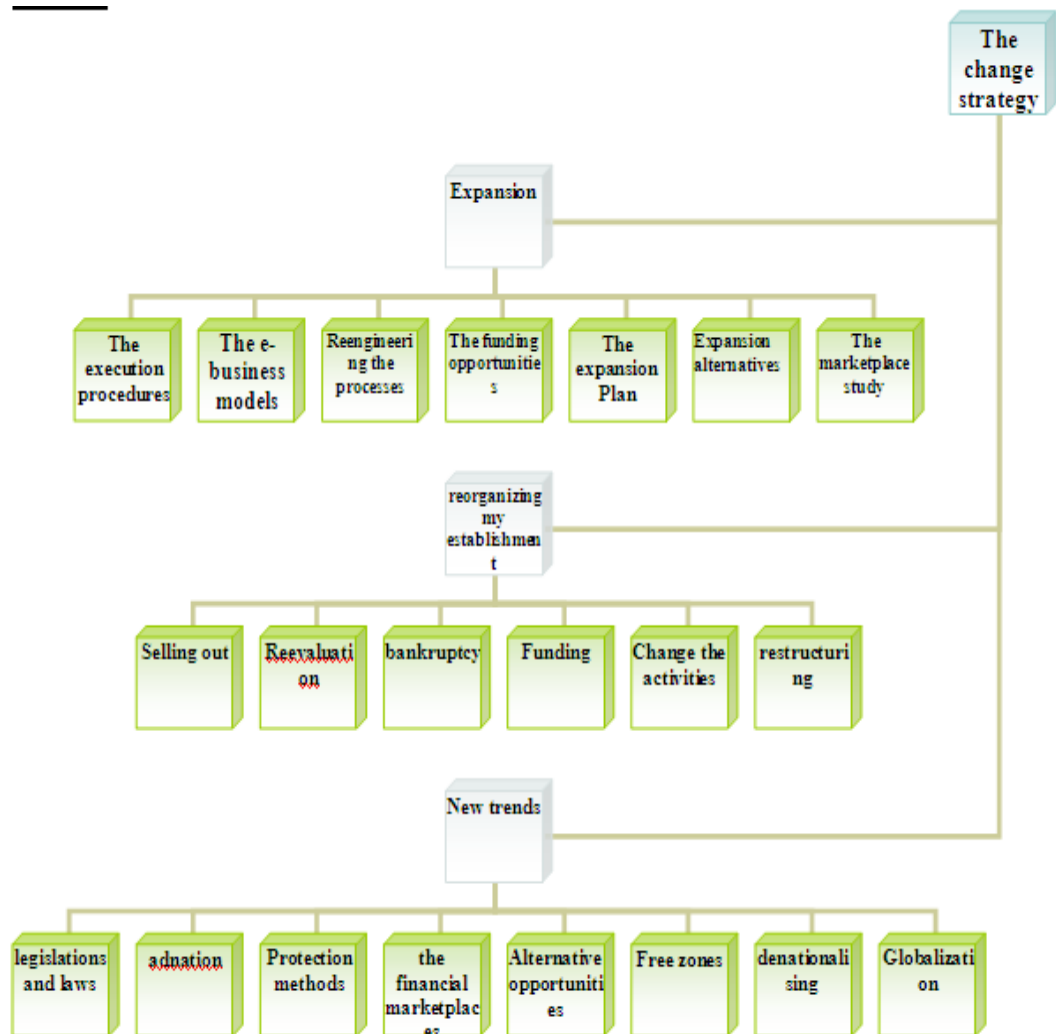**Fig. (2) Architecture of the MIS-Online**

Theme 1

Establishment establishing

Looking for businesses ideas

- Specifying the business opportunities
- The competitiveness characteristics
- The characteristics of the marketplace
- Specifying the businesses sectors
- Information collection

Planning the business opportunities

- Specifying the resources
- Organizing the businesses opportunities
- Vision and message
- Feasibility study

The execution

- The establishment funding
- The employment system
- The establishment registration
- Project location

Theme 2

The establishment Management

The internal system

- Quality's guarantee
- Organizing the work relationships
- Local-international norms
- The Internal monitoring
- Assurance
- Systems and instructions

My establishment systems

- Offices automation system
- Knowledge management system
- The Accountancy system
- Customers relationships management system
- Establishment resources planning system
- Databases systems

Purchases and repositories management

- Repositories monitoring system
- Repositories management
- Purchasing procedures
- suppliers relationship management
- The inventories management

Theme 3 _____

The change strategy

Expansion

- The execution procedures
- The e-business models
- Reengineering the processes
- The funding opportunities
- The expansion Plan
- Expansion alternatives
- The marketplace study

reorganizing my establishment

- Selling out
- Reevaluation
- bankruptcy
- Funding
- Change the activities
- restructuring

New trends

- legislations and laws
- adnation
- Protection methods
- the financial marketplaces
- Alternative opportunities
- Free zones
- denationalising
- Globalization

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Output	Knowledge	Skills	Values	Participate
Long life learners	• Subject matter • Sources of information	• Problem solving. • Critical thinking • Searching for information. • Information sorting. • Collecting information • Analyzing data	• Evaluate information. • Sharing information/resources • Definition information	• Join debates • Using media as (newspaper, t.v.) exposure • Write papers • Passing information to stakeholders
Good citizenship	• Local and global issues. • Learning more about procedure of taking decision.	• Discussion maker. • Debates. • Thinking approach. • Capacity building • Communicate with local community • Convincing skill	• Loyalty to community/country. • To be initiative. • Being responsive. • Value changing attitude • Working with group.	• Volunteers • Support local issues. • Effect on stakeholder decision. • Forming a force group(loopy)
Competition in the market	• Global and local information about market. • Information about jobs opportunity and requirement. • Most desired jobs in Future	• Define his ability. • Decision-making. • Using number communication skills • Persuasion • Self marketing •	• Evaluate time and effort. • Culture of shame • Competition spirit. • Teamwork • Professionalize.	• Decide the appropriate job • Improve his weakness. • Develop his strength • Link to job places • Help in economic growth

	• Definite workforce institutions			
Technology	• Updated global and local information. • Learning more about new technology.	• Using: E-mail, Calendar, Tools, Web resources, digital audio, Video, etc • Management of information • Creativity. • Understanding of new technology	• Respect hardware • Using in appropriate sites Hackers	• Analyze and make use of data. • Sharing knowledge • Apply new technology in his work or life

MIS-Online project (Pedagogical Frame work)

12.   MIS-Online accessing

Accessing the project online by the URL "http\\staging.elearning.jo" the site refers to Eduwae project. Each student have own student name and password, to log in the site, you can use "student001" as student name and "1234" as password in the text boxes which appeared on the home page, the services of the site will appeared, chose MIS-Online. Then use the provided themes.

13.   Conclusions

This paper proposes a conceptual framework and architecture for the development of a course-oriented e-learning project supported by knowledge management to provide a flexible, self-paced, and collaborative learning environment. The system will provide all of the basic teaching- and learning-related support facilities, plus some enhanced features. The system will also provide the facilities for capturing and sharing the knowledge created during utilization of the system.

The MI Stream Integrated e-Learning Program, referred to as MIS-Online, is an interactive set of e-Learning enhancement modules that will enhance the teaching and learning of the six MI Stream courses. To accomplish this objective, MIS-Online is fully integrated within the Ministry's overall MI Stream curriculum. MIS-Online will be use by all Jordanian students in grades 11 and 12 enrolled in the MI Stream. Presently, about 200 public schools offer the MI Stream curriculum and this is expected to increase over time. Some private schools also offer the MI Stream curriculum and will be given the option of accessing the MIS-Online modules through the Ministry's e-Learning Data Center. This online learning program supplements the Ministry's existing MIS curricula, textbooks and other teacher resources supporting teachers' efforts to improve the teaching of MI Stream subjects and students' efforts to successfully engage in their MI Stream courses. To achieve these objectives, MIS-Online will enable:

- MIS students throughout the kingdom to gain equal and fast access to all information at a low cost.
- Develop higher cognitive skills of the MIS student to enable them to synthesize and analyze the vast amount of information and be able to select useful and credible information.
- Simulate real life situations to make teaching and learning concepts easier and more authentic.
- Introduce various problems through which MIS students can practice their decision making skills and track consequences.
- Develop the ability of the students to become life long learners through enhancing their research, critical thinking, problem solving and other higher thinking skills.
- Prepare the MIS student to become competitive in the local Jordanian market by developing general ICT employability skills.
- Introduce the MIS concepts in a more enjoyable manner to make learning fun
- Build the capacity of the new generation in the use of technology, thus make learning MIS more interesting and relevant.
- Through integration of the six MIS subjects, the students will utilize applications of the subject in real life and the relationships between different disciplines.
- Support MIS educators in teaching and learning the MIS subjects.
- Guide MIS educators on the use of different research techniques.

- Promote project based learning, through the development of different scenarios that link to different themes in the MIS textbooks.

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